



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/868,845	09/07/2001	Juergen Rolf Mueller	0179-0170P	6312
2292	7590	11/02/2005	EXAMINER	
BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			STOCK JR, GORDON J	
			ART UNIT	PAPER NUMBER
			2877	

DATE MAILED: 11/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/868,845

Applicant(s)

MUELLER ET AL.

Examiner

Gordon J. Stock

Art Unit

2877

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 23-49, 51-59, 61, 62 and 64 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 24, 27, 29-31, 45-48, 51, 52, 54, 55, 57 and 58 is/are rejected.
- 7) ☒ Claim(s) 23, 25, 26, 28, 32-44, 49, 53, 56, 59, 61, 62 and 64 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 November 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

1. Amendment received August 10, 2005 has been entered into the record.

#### *Claim Objections*

2. **Claims 36, 43, 57, 61, and 64** are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim.

Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Specifically, the claims refer to an intended use, “ is applied to research ....” it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. Ex Parte Masham, 2 USPQ F.2d 1647 (1987).

3. **Claim 39** is objected to under 37 CFR 1.75 as being a substantial duplicate of **claim 38**. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

4. **Claim 23** is objected to for the following: on line 13 “obtaining the measuring values” should read –obtaining of the measuring value--; on line 13 “the obtaining” lacks antecedent basis; on line 16 “the interface” lacks antecedent basis; on line 23 “the image plane” lacks antecedent basis; on line 24 “the position of the interface” lacks antecedent basis; on line 26 “the position of the auxiliary focus” lacks antecedent basis. Corrections required. **Claims 25, 26, 28, 32, 34, 35, and 44** are objected to for depending from an objected base claim.

Art Unit: 2877

5. **Claim 24** is objected to for the following: on line 13 “maintained” should read – maintains--; on line 14 “the recording” lacks antecedent basis; on line 16 “the interface” lacks antecedent basis; on line 23 “the image plane” lacks antecedent basis; on line 24 “the position of the interface” lacks antecedent basis; on line 26 “the position of the auxiliary focus” lacks antecedent basis; on line 29 “the optic” lacks antecedent basis; on line 30 “the movement of the detector” lacks antecedent basis; and on line 30 “in dependence” should read –dependent--.

Corrections required.

6. **Claim 27** is objected to for the following: “the respective optics” lacks antecedent basis.

Correction is required.

7. **Claim 28** is objected to for the following: “the small extension” lacks antecedent basis.

Correction is required.

8. **Claim 29** is objected to for the following: “the optic” of line 3 lacks antecedent basis; on line 4 “the movement of the detector” lacks antecedent basis; and on line 4 “in dependence” should read –dependent--. Corrections required.

9. **Claim 33** is objected to for the following: “in dependence” on lines 2 and 4 should read –dependent--. Corrections required.

10. **Claim 37** is objected to for the following: “the image plane” of line 12 lacks antecedent basis. Correction is required. **Claims 40-42** are objected for depending from an objected base claim.

11. **Claim 38** is objected to for the following: on line 13 “maintained” should read – maintains--; on line 14 “the recording” lacks antecedent basis; on line 16 “the interface” lacks antecedent basis; on line 23 “the image plane” lacks antecedent basis; on line 24 “the position of

Art Unit: 2877

antecedent basis; on line 38 “the image plane” lacks antecedent basis. Corrections required.

**Claim 59** is objected to for depending from an objected base claim.

12. **Claim 39** is objected to for the following: on line 13 “maintained” should read – maintains--; on line 14 “the recording” lacks antecedent basis; on line 16 “the interface” lacks antecedent basis; on line 23 “the image plane” lacks antecedent basis; on line 24 “the position of the interface” lacks antecedent basis; on line 26 “the position of the auxiliary focus” lacks antecedent basis; on line 38 “the image plane” lacks antecedent basis; on line 41 “a substrate” should read –the substrate—; on line 47 “the device for positioning the auxiliary focus” lacks antecedent basis. Corrections required. **Claim 62** is objected to for depending from an objected base claim.

13. **Claim 46** is objected to for the following: “the optic” lacks antecedent basis. Correction is required.

14. **Claim 48** is objected to for the following: “the respective optics” lack antecedent basis. Correction is required.

15. **Claim 49** is objected to for the following: on line 13 “maintained” should read – maintains--; on line 14 “the recording” lacks antecedent basis; on line 16 “the interface” lacks antecedent basis; on line 23 “the image plane” lacks antecedent basis; on line 24 “the position of the interface” lacks antecedent basis; on line 26 “the position of the auxiliary focus” lacks antecedent basis. Corrections required.

16. **Claim 51** is objected to for the following: on line 13 “maintained” should read – maintains--; on line 14 “the recording” lacks antecedent basis; on line 16 “the interface” lacks antecedent basis; on line 23 “the image plane” lacks antecedent basis; on line 24 “the position of

Art Unit: 2877

the interface” lacks antecedent basis; on line 26 “the position of the auxiliary focus” lacks antecedent basis. Corrections required.

17. **Claim 53** is objected to for the following: on line 13 “maintained” should read – maintains--; on line 14 “the recording” lacks antecedent basis; on line 16 “the interface” lacks antecedent basis; on line 23 “the image plane” lacks antecedent basis; on line 24 “the position of the interface” lacks antecedent basis; on line 26 “the position of the auxiliary focus” lacks antecedent basis. Corrections required.

18. **Claim 54** is objected to for the following: “in dependence” should read –dependent-. Corrections required.

19. **Claim 55** is objected to for the following: on line 13 “maintained” should read – maintains--; on line 14 “the recording” lacks antecedent basis; on line 16 “the interface” lacks antecedent basis; on line 23 “the image plane” lacks antecedent basis; on line 24 “the position of the interface” lacks antecedent basis; on line 26 “the position of the auxiliary focus” lacks antecedent basis. Corrections required.

20. **Claim 56** is objected to for the following: on line 13 “maintained” should read – maintains--; on line 14 “the recording” lacks antecedent basis; on line 16 “the interface” lacks antecedent basis; on line 23 “the image plane” lacks antecedent basis; on line 24 “the position of the interface” lacks antecedent basis; on line 26 “the position of the auxiliary focus” lacks antecedent basis. Corrections required.

21. **Claim 58** is objected to for the following: “the optic” lacks antecedent basis. Correction required.

22. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

23. **Claims 24, 27, 29-31, 45, 46, 47, 48, 51, 52, 54, 57, and 58** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

24. As for **claim 24**, the phrase, "the position of the auxiliary focus relative to the interface is moved" of lines 29-30 is indefinite, for it is unclear as to how one moves a position rather than an object to change the object's position. **Claims 45, 47, 54, and 57** are rejected for depending upon a rejected base claim.

25. As for **claims 27 and 48**, the phrase, "a smaller part of the numerical aperture" is indefinite, for it is unclear as to how one uses a portion of the numerical aperture characteristic of a lens.

26. As for **claim 29**, the phrase, "the position of the auxiliary focus relative to the interface is moved" is indefinite, for it is unclear as to how one moves a position rather than an object to change the object's position.

27. As for **claim 30**, the phrase, "the position of the auxiliary focus relative to the interface is moved" is indefinite, for it is unclear as to how one moves a position rather than an object to change the object's position.

28. As for **claims 31 and 52**, the phrase "preferably" renders the claim indefinite because it is unclear whether the limitations, specifically periodical movement, following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Art Unit: 2877

29. As for **claim 46**, the phrase, “the position of the auxiliary focus relative to the interface is moved” is indefinite, for it is unclear as to how one moves a position rather than an object to change the object’s position.

30. As for **claim 51**, the phrase, “the position of the auxiliary focus relative to the interface is moved” is indefinite, for it is unclear as to how one moves a position rather than an object to change the object’s position.

31. As for **claim 58**, the phrase, “the position of the auxiliary focus relative to the interface is moved” is indefinite, for it is unclear as to how one moves a position rather than an object to change the object’s position.

***Claim Rejections - 35 USC § 103***

32. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

33. **Claim 55** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Scherübl et al. (WO 98/44375)—previously cited** in view of **Galbraith et al. (4,512,659)—previously cited**.

As to **claim 55**, Scherübl in a confocal microscope device discloses the following:  
scanning with a measuring volume using at least one apparatus being confocal with a first radiation source and at least one objective thereby receiving measuring values for characterization of a defect on semiconductor substrate; substantially maintaining its position; generating during the scanning step an auxiliary focus by means of at least two secondary radiation sources and an optic which is the same objective whereas the auxiliary foci are at different spatial relations to the sample due to differing focal points through chromatic aberration ; collimating the three radiation sources prior to hitting 3 and 4 of Fig. 8; detecting a

Art Unit: 2877

retroreflection from all three foci by a detector having a confocal arranged diaphragm; generating the auxiliary focus and retroreflection is used for measuring the position of the interface and adjusting positions of the foci relative to measuring volume through autofocusing (abstract, Fig. 8, pages 12-17 of translation). As for a support the figures of Scherübl disclose just an object plane; however, the object is scanned through the use of an x-y table (page 13, lines 20-21 of translation). As for the sample being investigated, a wafer is being inspected for defects and profile imaging may be used in confocal imaging (pages 2-4 of translation). However, he is silent concerning identifying entities arranged on the wafer. Galbraith teaches using a calibration wafer with entities that represent defects on it for calibration of the inspection device (col. 2, lines 25-40). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to have the inspection device investigate a calibration wafer with scattering elements representing defects arranged on the wafer in order to calibrate the inspection device to set resolution.

As for the substrate being a mineral, an inorganic substance, a semiconductor wafer is the object being inspected (pages 2-4 of translation).

***Allowable Subject Matter***

34. **Claims 23, 25, 26, 28, 32-44, 49, 53, 56, 59, 61, 62, and 64** would be allowable if amended to overcome the objection above.

**Claims 24, 27, 29-31, 45-48, 51, 52, 54, 57, and 58** would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, and any objections set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Art Unit: 2877

As to **claim 23** the prior art of record, taken alone or in combination, fails to disclose or render obvious in a method of optically detecting at least one entity generating an auxiliary focus by means of at least one second radiation source and a second objective, in combination with the rest of the limitations of **claims 23, 25-36, 44, and 46**.

As to **claim 24** the prior art of record, taken alone or in combination, fails to disclose or render obvious in a method of optically detecting at least one entity the auxiliary focus relative to the interface is moved and the position is adjusted in a manner that the intensity of the retroreflection reaches its maximum, in combination with the rest of the limitations of **claims 24, 45, 47, 48, 52, 54, 57, and 58**.

As to **claim 37**, the prior art of record, taken alone or in combination, fails to disclose or render obvious in an apparatus for optically detecting at least one entity at least a second radiation source as well as at least one further device comprising a second objective, in combination with the rest of the limitations of **claims 37, 40-43**.

As to **claim 38**, the prior art of record, taken alone or in combination, fails to disclose or render obvious in an apparatus for optically detecting at least one entity means for variation of the convergence of bundles of rays that are focused to generate the auxiliary focus and the measuring volume, in combination with the rest of the limitations of **claims 38, 59, and 61**.

As to **claim 39**, the prior art of record, taken alone or in combination, fails to disclose or render obvious in an apparatus for optically detecting at least one entity means for variation of the convergence of bundles of rays that are focused to generate the auxiliary focus and the measuring volume, in combination with the rest of the limitations of **claims 39, 62, and 64**.

As to **claim 49**, the prior art of record, taken alone or in combination, fails to disclose or render obvious in a method of optically detecting at least one entity obtaining the small extension of the confocal detected volume by a diaphragm having a smaller opening than a confocal arranged diaphragm for the detection of the measuring volume, in combination with the rest of the limitations of **claim 49**.

As to **claim 51**, the prior art of record, taken alone or in combination, fails to disclose or render obvious in a method of optically detecting at least one entity the auxiliary focus is moved both laterally and axially to the optical axis, in combination with the rest of the limitations of **claim 51**.

As to **claim 53**, the prior art of record, taken alone or in combination, fails to disclose or render obvious in a method of optically detecting at least one entity the retroreflection is detected by means of at least two detectors, in combination with the rest of the limitations of **claim 53**.

As to **claim 56**, the prior art of record, taken alone or in combination, fails to disclose or render obvious in a method of optically detecting at least one entity the entities selected are separated during or after the scanning process from the other entities and/or substrates, in combination with the rest of the limitations of **claim 56**.

#### ***Response to Arguments***

35. Applicant's arguments, see Remarks, filed August 10, 2005, with respect to the previous rejection under 35 U.S.C. 102(b) and 103(a) have been persuasive. Due to the amendment to the claims and persuasiveness the previous rejection under 35 U.S.C. 102(b) and 103(a) have been withdrawn. As for the allowable subject matter in claim 55 mentioned in the previous office

Art Unit: 2877

action, the Examiner apologizes for the inconvenience, but upon further consideration of the term 'mineral' a new rejection under 35 U.S.C. 103(a) has been made. See above.

As for the applicant's amendment to **claims 36, 43, 57, 61, and 64** for being objected to under 37 CFR 1.75(c), the Examiner does not find the amendment to the claims as overcoming the objection for "is applied to" is still synonymous with 'intended use.' So the amendment does not further limit the claims.

As for the rejection of **claim 52** under 35 U.S.C. second paragraph, applicant's amendment to the claim does not refer the indefinite nature of the claim. See rejection above. As for the new lines of objection and rejections under 35 U.S.C. 112 second paragraph the Examiner apologizes for the inconvenience but upon further consideration of the claims the objections and rejections were made. See above.

### ***Conclusion***

36. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: U.S. Patent 5,604,344 to Finarov

U.S. Patent 6,677,565 to Wahl et al.

### ***Fax/Telephone Numbers***

If the applicant wishes to send a fax dealing with either a proposed amendment or a discussion with a phone interview, then the fax should:

- 1) Contain either a statement "DRAFT" or "PROPOSED AMENDMENT" on the fax cover sheet; and
- 2) Should be unsigned by the attorney or agent.

Art Unit: 2877

This will ensure that it will not be entered into the case and will be forwarded to the examiner as quickly as possible.

*Papers related to the application may be submitted to Group 2800 by Fax transmission. Papers should be faxed to Group 2800 via the PTO Fax machine located in Crystal Plaza 4. The form of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CP4 Fax Machine number is: (571) 273-8300*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gordon J. Stock whose telephone number is (571) 272-2431.

The examiner can normally be reached on Monday-Friday, 10:00 a.m. - 6:30 p.m.

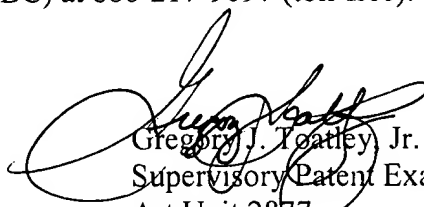
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr., can be reached at 571-272-2800 ext 77.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private Pair system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DA

gs

October 29, 2005

  
Gregory J. Toatley, Jr.  
Supervisory Patent Examiner  
Art Unit 2877

31 Oct 06